

## Studies in Malagasy *Lauraceae* I : novelties in *Potameia*

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**Summary** : Three new species of *Potameia* (*Lauraceae*) endemic to Madagascar are described.

**Résumé** : Description de trois nouvelles espèces du genre *Potameia* (*Lauraceae*), endémiques de Madagascar.

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*Potameia* is a genus represented by about 20 species in Madagascar, all of them endemic. As is common in *Lauraceae*, most species are represented by very few collections. KOSTERMANS (1950) recognized four species in his treatment of *Lauraceae* for the Flore de Madagascar; subsequently (KOSTERMANS, 1957) he described 15 additional species. In order to produce a new *Lauraceae* treatment for the Flore de Madagascar, I have studied all *Potameia* collections in P and MO. This work showed that a number of *Potameia* species are undescribed; of these, three are published in this contribution, while description of the other novelties, estimated at eight species, will be postponed until more material is available.

The published *Potameia* species are, in general, not well understood. Several species have been described based on incomplete (fruiting or in bud) specimens; sometimes flowering collections were attributed to these species based on a general resemblance of vegetative characters. Because so few *Potameia* collections are available, the range of variation within the various species is poorly understood and many identifications based on vegetative similarities seem unreliable. Of the 19 species recognized by KOSTERMANS (1957), ten were only known from the type, while an additional four species were known from two or three collections. Only three species were represented by more than ten specimens, two of which have served as a dumping ground; *Potameia thouarsiana* (type fruiting) was circumscribed to include a variety of specimens with small (< 7 cm), elliptic to obovate leaves, and *P. crassifolia* to include specimens with larger, elliptic leaves. An improved classification of *Potameia* should be based on flowering specimens. In spite of their small size, even for *Lauraceae*, *Potameia* flowers offer good characters, such as presence or absence of pubescence on tepals or the ovary, inflorescence size and indument, and presence or absence of staminodia and glands. Such characters are, in my opinion, vastly better than leaf shape, size or indument. Therefore, I emphasize the need for additional good flowering collections of *Potameia* (and *Lauraceae* in general).



**Potameia confluens** van der Werff, *sp. nov.* — Fig. 1, A-E.

*A congeneribus antheris 1-locellatis recedit.*

TYPE : *Schatz & Gentry 2049*, Madagascar, Prov. Toamasina, Nosy Mangabe, 5 km from Maroantsetra, elev. 0-330 m, Apr 13-23.1988, old fls. (holo-, MO; iso-, BR, K, P, PRE, TAN, WAG).

Tree, to 25 m tall. Twigs glabrous, terete, 2-3 mm in diameter 5 cm below tip. Terminal bud glabrous, the margin ciliate. Leaves alternate, firmly chartaceous, 7-16 × 2.5-7 cm, tip acute or obtuse, base acute or cuneate, elliptic to broadly elliptic, glabrous on both surfaces, lateral veins 6-10 on each side, midvein immersed on upper surface, raised on lower surface, secondary and tertiary venation raised on both surfaces, forming a rather coarse reticulum; margin thickened and slightly recurved. Petioles glabrous, 11-18 mm long, canaliculate.

Inflorescences axillary, to 10 cm long, multiflowered, paniculately branched, with a broom-like appearance; bracts rarely present on old inflorescences, elliptic, glabrous except for the pubescent margin; the flowers more or less cymosely or racemosely arranged. Pedicels glabrous, 2-4 mm long, always longer (or much longer) than the diameter of the flowers, the upper part gradually thickened. Flowers glabrous, ca. 1 mm in diameter; tepals 4, stamens 4, 1-celled, in old flowers exceeding the tepals, the cell large, nearly as wide as the anther, staminodia and glands not seen, pistil glabrous, ovary slender, gradually narrowed into the style; receptacle rather deep, the ovary immersed in it.

Very young fruits ellipsoid, the tepals persisting at the base.

OTHER MATERIAL STUDIED : *Schatz & Gentry 2105*, Madagascar, Prov. Toamasina, Nosy Mangabe (MO); *2160, ibid.* (MO).

*Potameia confluens* is unique among the Malagasy species of *Potameia* by its 1-celled stamens. Additional useful characters are the rather large, broom-like inflorescences, flowers with long pedicels, the nearly glabrous condition of the plant, and the rather large leaves with raised reticulation. An unusual feature of the flowers is the deep receptacle; it is possible that what I call the receptacle is at least partly formed by fused filament of the stamens; free filaments are lacking. Staminodia are probably represented by small tufts of hairs, which are present between the bases of adjoining stamens.

Stamens with one anther cell are very rare in *Lauraceae*. They have been reported from *Syndiclis paradoxa* Hook. f. from Bhutan, which also has dimerous flowers. Although the one-celled anthers were strongly emphasized in the description of *Syndiclis*, it is now generally accepted that this character is of little taxonomic value above the species level. Thus, I see no difficulties including *Potameia confluens* in *Potameia*; HYLAND (1989) also included *Endiandra monothyra* in *Endiandra* in spite of its one-celled anthers. Likewise, FOUILLOY (1964) placed an African species in *Beilschmiedia* as *B. calcitranthera* in spite of its one-celled stamens.

Old flowers : April.





Fig. 1. — *Potameia confluens* van der Werff : A, habit ; B, flower ; C, pistil ; D, stamen, ventral view ; E, stamen, lateral view. — *Potameia obtusifolia* van der Werff : F, habit ; G, part of inflorescence ; H, flower ; I, pistil ; J, stamen and tepal, ventral view ; K, stamen and tepal, lateral view. — *Potameia tomentella* van der Werff : L, habit ; M, flower ; N, pistil ; O, stamen, ventral view ; P, stamen and tepal, lateral view.



**Potameia obtusifolia** van der Werff, *sp. nov.* — Fig. 1, F-K.

*Potameia tomentella similis, sed foliis latis apice obtusis, reticulatione inconspicua et ovario glabro differt.*

TYPE : 9139 RN, Madagascar, Vohimarangita amboviriane, Tamatave, fl. (holo-, P; iso-, MO).

Large tree, at least to 22 m tall. Twigs terete or the uppermost part roundly angled, the terminal few cm appressed grey-pubescent, older parts glabrous, diameter of twigs 6-8 mm ca. 5 cm below apex. Terminal bud densely grey pubescent. Leaves alternate, firmly chartaceous, laminae 14-25 × 7-12 cm, (broadly) elliptic to slightly obovate, the tip obtuse to rounded, base acute, glabrous on both surfaces, lateral veins 9-11 on each side, arching upwards and fading out near the margin, tertiary venation not or very slightly raised on both surfaces, midrib and lateral veins raised on lower surface, immersed on upper surface. Petioles 2-3 cm long, glabrous.

Inflorescences axillary, 10-20 cm long, brown-tomentellous, many-flowered, intricately branched, the flowers cymosely or racemosely arranged, some bracts usually persisting, these ovate, tomentellous on both surfaces, 5 mm or less (depending on location on inflorescence) long. Floral pedicels ca. 0.5 mm long, about as long as the width of the flowers. Flowers tomentellous, globose or depressed globose, ca. 1 mm in diam.; tepals 4, equal, glabrous inside; stamens 4, 2-celled, opposite the tepals, the cells introrse, opening upwards; stamens pressed against outer tepals and with more or less the same broad shape, about as long as tepals; staminodia 2, opposite the 2 outer tepals, slender, linear, with 2 large, flat glands attached near the base. Receptacle shallow, glabrous. Ovary ovoid, glabrous, gradually narrowed into the style; style slightly exerted at anthesis.

Fruit unknown.

OTHER MATERIAL STUDIED : *Capuron 18095 SF*, Madagascar, Réserve Naturelle 1, Prov. Ambodiriana (P); *Schatz et al. 1568*, Prov. Diego Suarez (Antsiranana), Massif de Marojezy, just N of the village Mandena, elev. 100-200 m, 19 Sept 1987 (MO, P).

COMMON NAME : Antaivaratra.

FLOWERING PERIOD : August-October.

*Potameia obtusifolia* stands out among the few *Potameia* species with large leaves by virtue of its obtuse, broad leaves and its weakly (or not at all) raised reticulation. Its closest relative is *P. tomentella*, which has narrower, acute leaves with prominently raised reticulation and a pubescent ovary. Inflorescence and flowers of *P. obtusifolia* are strikingly brown-tomentellous. Noteworthy are also the large, flattened glands at the base of staminodes.

**Potameia tomentella** van der Werff, *sp. nov.* — Fig. 1, L-P.

*Potameia obtusifolia similis, sed ovario pubescente, foliis apice acutis, angustis, reticulatione elevata recedit.*



TYPE : 16031 SF, Madagascar, Tampolo-Fénériver (Prov. Toamasina), 15 Sept 1986 (holo-, P; iso-, MO, P).

Tree, to 13 m tall. Twigs terete, the upper parts finely brown-tomentellous, becoming glabrous with age, diameter ca. 5 cm below the terminal bud 3-4 mm. Terminal bud brown-tomentellous. Leaves alternate, firmly coriaceous, laminae (narrowly) elliptic, 17-22 × 6-8 cm, apex and base acute, glabrous on both surfaces, lateral veins 8-10 on each side, arching upwards and fading near the margin, tertiary reticulation clearly raised on both surfaces, midrib and lateral veins raised on lower surface, immersed on upper surface. Petioles 2-2.5 cm long, near the base with a similar indument as the twig, becoming glabrous towards the lamina.

Inflorescences axillary, brown-tomentellous, paniculately branched, multiflowered, 10-15 (or more?) cm long, the flowers cymosely or racemosely arranged along the ultimate branchlets. Pedicels 0.5-1 mm long, usually shorter than the width of the flowers, brown-tomentellous. Flowers tomentellous outside, more or less globose, ca. 1.5 mm in diameter, tepals incurved, stamens included, but pistil shortly exerted; tepals 4; stamens 4, 2-celled, opposite the tepals, broad, covering the tepals; staminodia 2, stipitiform, glands not seen. Pistil ovoid, the pubescent ovary gradually narrowed into the style. Receptacle rather deep, glabrous, with a ring of hairs on the upper part.

Infructescence to 20 cm long, fruit ellipsoid to narrowly ellipsoid, ca. 4 × 1.5 cm, the tepals deciduous, fruit seated on naked pedicel.

OTHER MATERIAL STUDIED : 16471 SF, Madagascar, Tampolo, Fénériver (Prov. Toamasina), fr. (P).

COMMON NAME : Antaivaratra.

FLOWERS : September. FRUITS : December.

USE : Construction wood.

The only two *Potameia* species with larger leaves (larger than 15 cm, usually some leaves larger than 20 cm) and brown-tomentellous inflorescences are *P. tomentella* and *P. obtusifolia*. Differences between these two species are discussed under *P. obtusifolia*. Other *Potameia* species may have large leaves as well, but these have rather sparsely pubescent (hairs appressed) or glabrous flowers and inflorescences.

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